REMARKS:

Claim Election:

Applicants hereby confirm election of claims 1-28 without traverse. Claim 30 has been canceled. Applicants hereby request rejoinder of claim 29 upon allowance of parent claim 1, and the opportunity to rejoin claims 31-35 as dependent claims from claim 15 upon allowance.

Claims 1-8, 13-22 and 27-28

Claims 1-8, 13-22 and 27-28 have been rejected under 35 USC 103(a) as being unpatentable over Breyta et al. (US2001/0005741) in view of Whewell et al. (US5017271).

The analysis of obviousness was set forth in *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966). In order to establish a *prima facie* case of obviousness, three basic criteria must be met:

> First, there must be some *suggestion or motivation*, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the teachings of the references. Second, there must be a *reasonable expectation of success*. Finally, the prior art reference or combined references must teach or suggest *all the claim limitations*. *The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art*, and not based on applicant's disclosure (*In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991; emphasis added).

Applicants respectfully traverse the rejection of claims 1-8, 13-22 and 27-28 as failing the *Graham* test. Specifically, regarding claim 1 and its dependents, the combination proposed in the rejection fails the first element of the *Graham* test. Regarding claim 15 and its dependents, the rejection fails the first and third elements of the *Graham* test.

Regarding claims 1-8, 13-22 and 27-28, Applicants respectfully disagree that there is suggestion or motivation to combine the teachings of Breyta with Whewell.

Particularly, Whewell teaches away from plating using an underlayer such as that taught by Breyta. A *prima facie* case of obviousness may be rebutted by showing that the art, in any material respect, teaches away from the claimed invention. *In re Geisler*, 116 F.3d 1465, 1471, 43 USPQ2d 1362, 1366 (Fed. Cir. 1997). It is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983). As shown in Breyta's FIGS. 2-3 and 6-7, an undercut is formed as part of the photoresist patterning process. As stated in Whewell col. 2, lines 26-34, formation of an undercut under the photoresist results in conductive lines that are curved inwardly. This in turn adversely affects the minimum size possible for manufacturing conductive lines. Accordingly, Whewell's invention "eliminates the need for a pre-treatment of the metallic surfaces prior to the application of the photoresist, and allows for better resolution in the photo imaging process." *See* Whewell col. 3, lines 26-31. It is clear that Whewell teaches away from plating in a process as taught by Breyta, as to do so would result in poor definition of the conductive lines that are so critical to Whewell's invention. Applying the rules of *In re Geisler*, and *In re Grasselli*, because Whewell not only teaches away from masking processes implementing undercuts, but actually makes such an object of his invention, that any rejection based on Whewell and Breyta is improper. Reconsideration and allowance of claims 1-8, 13-22 and 27-28 is respectfully requested.

Further, the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Although a prior art device "may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so." 916 F.2d at 682, 16 USPQ2d at 1432.). As noted in the Office Action, Breyta does not mention plating. As noted above, Whewell indicates that plating in conjunction with a mask having an undercut is undesirable. Therefore, it cannot be said that the prior art suggests the desirability of the combination, as required by *In re Mills*.

For any of the foregoing reasons, the rejection fails the first prong of the *Graham* test. Reconsideration and allowance of claims 1-8, 13-22 and 27-28 is respectfully requested.

Regarding claims 13-22 and 27-28, Applicants respectfully traverse the rejection as failing the third prong of the *Graham* test. Particularly, nowhere does Breyta or the remaining art of record disclose or suggest the unique polyphenolic polymer having the claimed repeating monomeric units. Accordingly, the rejection is improper. Reconsideration and allowance of claims 13-22 and 27-28 is respectfully requested.

Claims 9-11 and 23-25

Claims 9-11 and 23-25 have been rejected under 35 USC 103(a) as being unpatentable over Breyta et al. in view of Whewell and further in view of Lee (US6866987).

Regarding claims 9-11 and 23-25, Applicants have shown that the parent claims 1 and 15, respectively, are allowable over the combination of Breyta and Whewell. Accordingly, the addition of Lee does not render the claims obvious.

Regardless, Applicants also respectfully assert that the combination proposed in the rejection fails the third prong of the *Graham* test. Particularly, regarding claims 9 and 23, Lee has been added to show that the developer does not remove the exposed portion of the barrier layer. Applicants respectfully disagree. Referring to Lee FIG. 2 and related description at col. 3, lines 28-64 (cited in part in the rejection), it is clear that the underlayer 25 is in fact removed with the photoresist layer 12 after exposure. As shown, after exposure, the photoresist layer 12 and underlayer 25 are removed. Note with particularity Lee col. 3, lines 42-45, which states that "Layers 25 and 12 together form a bilayer which is treated as a single layer for purposes of exposure to radiation and subsequent development." Then, as noted at Lee col. 3, lines 54-56, etching of the underlayer 25 is allowed to continue to create an undercut, as shown in Lee FIG. 4. Accordingly, Lee does not teach or suggest that the underlayer 25 remains after

radiation and development. Thus, the rejection fails the *Graham* test. Reconsideration and allowance of claims 9 and 23 is respectfully requested.

Regarding claims 10-11 and 24-25, Applicants also respectfully disagree that Lee teaches or suggests removal of underlayer 25. Particularly, as mentioned immediately above, the underlayer 25 is removed as part of the developing process. Further, referring to Lee col. 4, lines 9-15 (cited in the rejection), Applicants note that this section refers to using the remaining photoresist 12 as a mask for etching and milling of a substrate 22, as shown in FIG. 4 (prior to milling or etching) and FIGS. 5-6 (after milling or etching). Accordingly, Lee does not teach or suggest that the underlayer 25 is removed by milling or etching. Thus, the rejection fails the *Graham* test. Reconsideration and allowance of claims 10-11 and 24-25 is respectfully requested.

Claims 12 and 26

Claims 12 and 26 have been rejected under 35 USC 103(a) as being unpatentable over Breyta et al. in view of Whewell and further in view of Pinarbasi (US6218056).

Applicants have shown that the parent claims 1 and 15, respectively, are allowable over the combination of Breyta and Whewell. Accordingly, the addition of Pinarbasi does not render the claims obvious.

Regardless, Applicants also respectfully assert that the combination proposed in the rejection fails the third prong of the *Graham* test. Claims 12 and 26 each require that no undercuts are created under the photoresist. While Pinarbasi indicates that the length of the undercut can be controlled by varying the amount of time the weak developer is left in place, Pinarbasi does indeed indicate that an undercut is present. First, by stating that the length of the undercut is controllable, he implies that an undercut is present. Second, Pinarbasi FIG. 12 shows an undercut. Nowhere does Pinarbasi suggest that no undercut is present. Thus, the rejection fails the *Graham* test. Reconsideration and allowance of claims 12 and 26 is respectfully requested.

New Claim

New claim 36 has been added to further define and vary the scope of the present invention. The claim is fully supported in the present application and drawings as originally filed. No new matter has been added. Allowance of claim 36 is respectfully requested.

Claim 36 is believed to be allowable for the same reasons as claim 1. Claim 36 also requires that the barrier layer is present in an effective amount to prevent cracks in the photoresist from transferring through the barrier layer and exposing portions of the substrate. Breyta is silent as to formation of cracks in the photoresist. This is likely because the sputtering method of Breyta does not result in the formation of "fingers" of metal growing from the substrate, as the inventors found occurs during plating. *See* FIG. 9 of the present application, showing plated wafers according to a prior art process. For the current generation of write heads in development, high-moment NiFe plating is necessary at P1P and P2 to achieve the targeted magnetic performance. The low temperature and low pH required result in a plating environment with significant stress on the photoresist. As a result of the stress, the photoresist cracks during plating. More particularly, at the highest stress areas, metals press against the walls of the resist structure. The compression against the soft resist causes the resist to deform and crack. The plating solution fills the cracks 10 and if it makes contact with the seed layer, NiFe plates in the cracks, forming "fingers" 10 that plate into the cracks. When the resist is removed, the "fingers" 10 of plated metal remain on the substrate in various locations. The unwanted plating adversely affects functionality and reliability of the writer.

Similarly, Whewell, Lee and Pinarbasi are silent as to cracks in the photoresist. Thus, the art of record fails to teach or suggest all of the limitations of claim 36 as required by the *Graham* test.

In the event a telephone conversation would expedite the prosecution of this application, the Examiner may reach the undersigned at (408) 971-2573. For payment of any additional fees due in connection with the filing of this paper, the Commissioner

is authorized to charge such fees to Deposit Account No. 50-2587 (Order No. HSJ920030085US1).

Respectfully submitted,

By: _____ Date: 2/28/06

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